COMPUTERS & EDUCATION

An International Journal

Editor:
Rachelle S. Heller The George Washington University

Volume Contents and Author Index

VOLUME 28

1997

PERGAMON

COMPUTERS & EDUCATION

EDITOR

Professor RACHELLE S. HELLER
Department of Electrical Engineering
and Computer Science
The George Washington University
Washington, DC 20052, U.S.A.
Fax: +1 202 994 0227
e-mail: sheller@seas.gwu.edu

EDITORIAL ADVISORY BOARD

A. A. Pouring, U.S.A. (Founder Editor)
D. F. Rogers, U.S.A. (Founder Editor)
P. R. Smith†, U.K. (Founder Editor)

A. Bartlomé, Spain
J. Chew, Singapore
D. Clements, U.S.A.
B. Collis, The Netherlands
T. Downes, Australia
J. Gal-Ezer, Israel
M. Gigante, Australia
J. R. Hartley, U.K.
B. Kurshan, U.S.A.
T. Kurtz, U.S.A.
E. Lehtinen, Finland
T. Plomp, The Netherlands
W. Ramsay, U.K.
T. Sakamoto, Japan
I. Sanders, South Africa
P. Scrimshaw, U.K.
D. Squires, U.K.
W. Tagg, U.K.
D. J. Thompson, U.S.A.

European Book Review Editor: Professor David Hawkridge, Institute of Educational Technology, The Open University, Milton Keynes MK7 6AA, U.K.

U.S. Book Review Editor: Professor Joyce Little, Department of Computer and Information Sciences, Towson State University, Baltimore, MD 21204, U.S.A.

Publishing Office

Elsevier Science Ltd, Bampfylde Street, Exeter EX1 2AH, U.K. [*Tel.*: *Exeter (01392) 251558; Fax*: *(01392) 425370*]

Advertising Office

Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. *[Tel.*: *Oxford (01865) 843000; Fax*: *(01865) 843010]*

Subscription Rates

Annual Institutional Subscription Rates 1997: Europe, The CIS and Japan NLG 1381.00; all other countries US$852.00. Associated Personal Subscription rates are available on request for those whose institutions are library subscribers. Dutch Guilder prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice. Any enquiries relating to subscriptions should be sent to: **The Americas:** Elsevier Science Customer Support Department, P.O. Box 945, New York, NY 10010, U.S.A. [*Tel.*: (+1) 212-633-3730/1-888 4ES-INFO; *Fax:* (+1) 212-633-3680; *e-mail:* usinfo-f@elsevier.co.com]. **Japan:** Elsevier Science Customer Support Department, 9-15 Higashi-Azabu 1-chome, Minato-ku, Tokyo 106, Japan [*Tel.*: (+81) 3-5561-5033. *Fax:* (+81) 3-5561-5047; *e-mail:* kyf04035@niftyserve.or.jp]. **Asia Pacific (*excluding Japan*):** Elsevier Science (Singapore) Pte Ltd, No. 1 Temasek Avenue, 17-01 Millenia Tower, Singapore 039192 [*Tel.*: (+65) 434-3727; *Fax:* (+65) 337-2230; *e-mail:* asiainfo@elsevier.com.sg]. **Rest of the World:** Elsevier Science Customer Service Department, P.O. Box 211, 1001 AE Amsterdam, The Netherlands [*Tel.*: (+31) 20-485-3757; *Fax:* (+31) 20-485-3432; *e-mail:* nlinfo-f@elsevier.nl].

Back Issues

Back issues of all previously published volumes are available direct from Elsevier Science Offices (Oxford and New York). Complete volumes and single issues can be purchased for 1992–1996. Earlier issues are available in high quality photo-duplicated copies as complete volumes only.

Published 8 issues/annum (2 volumes) in January, February, April, May, August, September, November, December

Copyright © 1997 Elsevier Science Ltd

PERIODICALS POSTAGE PAID AT RAHWAY, NJ. *Computers & Education* (ISSN 0360-1315) is published 8 issues per year in January, February, April, May, August, September, November and December, by Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. The annual subscription in the U.S.A. is $852. *Computers & Education* is distributed by Mercury Airfreight International Ltd, 2323 Randolph Avenue, Avenel, NJ 07001-2413, U.S.A. POSTMASTER: Please send address corrections to *Computers & Education*, c/o Elsevier Science Regional Sales Office, Customer Support Department, 655 Avenue of the Americas, New York, NY 10010, U.S.A.

CONTENTS

Number 1

A. Durndell and K. Thomson — 1 Gender and computing: a decade of change?

John Trushell, Christine Reymond, Roger Herrera and Pam Dixon — 11 Undergraduate students' use of information communicated during e-mail "tutorials"

Malcolm Simmons and Peter Cope — 23 Working with a round turtle: the development of angle/rotation concepts under restricted feedback conditions

Neil Selwyn — 35 Students' attitudes toward computers: validation of a computer attitude scale for 16–19 education

David Crowe and Hossein Zand — 43 Novices entering mathematics—I. The impact of new technology

Cheng-Chih Wu, Janet Mei-Chuen Lin and Ian Yat-Wei Hsu — 55 Closed laboratories using SimLIST and SimRECUR

Number 2

Ingeborg Janssen Reinen and Tjeerd Plomp — 65 Information technology and gender equality: a contradiction in terminis?

Jonathan K. Kies, Robert C. Williges and Mary Beth Rosson — 79 Evaluating desktop video conferencing for distance learning

J. S. Song, S. H. Hahn, K. Y. Tak and J. H. Kim — 93 An intelligent tutoring system for introductory C language course

M. A. Quaddus — 103 Computer aided learning of multiple criteria decision making: an integrated system and its effectiveness

John Appleby, Peter Samuels and Tasmin Treasure-Jones — 113 *Diagnosys*—a knowledge-based diagnostic test of basic mathematical skills

Bruce L. Mann — 133 Evaluation of presentation modalities in a hypermedia system

Number 3

Declan Jerome Byrne and Jeffrey L. Moore — 145 A comparison between the recommendations of Computing Curriculum 1991 and the views of software development managers in Ireland

Mehmet Akbaba	155	Teaching transient behavior of electrical machines with personal computers
Justin Watkins, Andy Augousti and Gayle Calverley	165	Evaluation of a physics multimedia resource
Lam-For Kwok, Siu-Cheung Kong and Ying-Yu Kam	173	Timetabling in Hong Kong secondary schools
R. L. Martens, M. M. A. Valcke and S. J. Portier	185	Interactive learning environments to support independent learning: the impact of discernability of embedded support devices
Book Reviews	199	

Number 4

Andy Sloane	207	Learning with the web: experience of using the World Wide Web in a learning environment
Moshe Telem	213	The school computer administrator's (new) role impact on instruction administration in a high-school—a case study
Charles Kann, Robert W. Lindeman and Rachelle Heller	223	Integrating algorithm animation into a learning environment
Ricardo Rosas, Miguel Nussbaum, Katherine Strasser and Felipe Csaszar	229	Computer assisted meditation for blind children
Carol Hubbard, Ole Jakob Mengshoel, Chris Moon and Yong Se Kim	237	Visual reasoning instructional software system
Kar-Tin Lee	251	Impediments to good computing practice: some gender issues